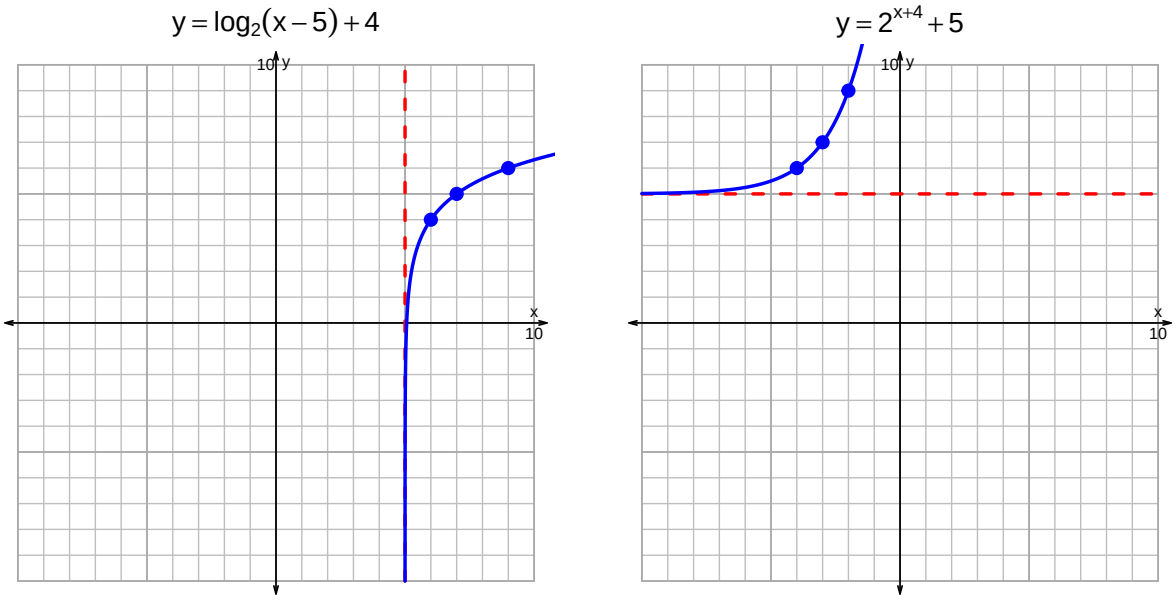
Name: Date:

S18QUIZ: EXP LOG (SLTN v257)

1. Graph $y = \log_2(x-5)+4$ and $y = 2^{x+4}+5$ on the grids below. Also, draw any asymptotes with dotted lines.



2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$-11 = \left(\frac{-7}{5}\right) \cdot 10^{-4t/3}$$

Divide both sides by $\frac{-7}{5}$.

$$\frac{11 \cdot 5}{7} = 10^{-4t/3}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{11 \cdot 5}{7}\right) = \frac{-4t}{3}$$

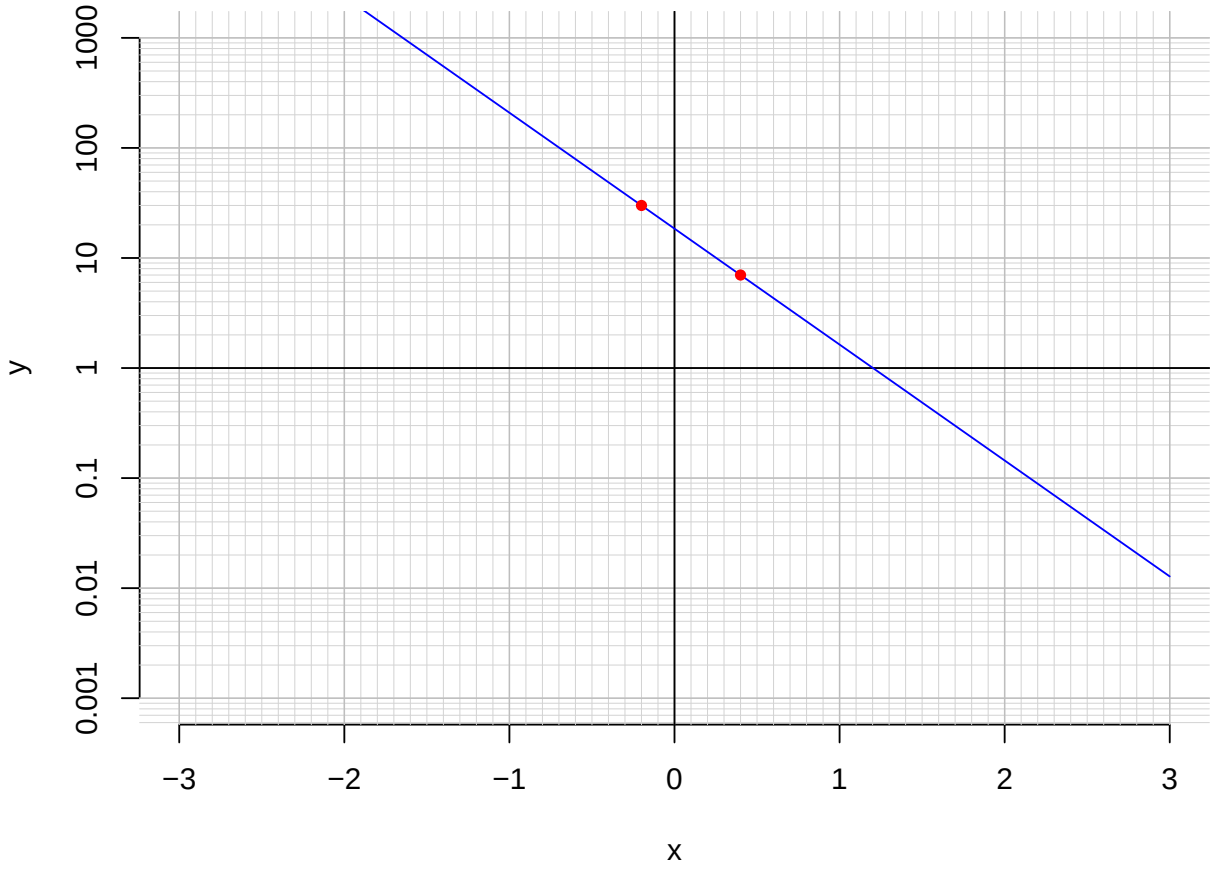
Divide both sides by $\frac{-4}{3}$.

$$\frac{-3}{4} \cdot \log_{10}\left(\frac{11 \cdot 5}{7}\right) = t$$

Switch sides.

$$t = \frac{-3}{4} \cdot \log_{10}\left(\frac{11 \cdot 5}{7}\right)$$

3. An exponential function $f(x) = 18.5 \cdot e^{-2.43x}$ is graphed below on a semi-log plot.



a. Using the plot above, evaluate $f(-0.2)$.

$$f(-0.2) = 30$$

b. Express $f^{-1}(x)$, the inverse of f.

$$f^{-1}(x) = \frac{-1}{2.43} \cdot \ln\left(\frac{x}{18.5}\right)$$

c. Using the plot above, evaluate $f^{-1}(7)$.

$$f^{-1}(7) = 0.4$$